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# Wastewater Treatment Systems
## General Requirements

### Installation Permit

**All wastewater treatment systems installed, constructed, altered or repaired on fee status land in Lake County must have a valid Installation Permit issued by Lake County Environmental Health prior to the start of construction.**

Repairs and/or maintenance may be made to a wastewater treatment system without first obtaining an Installation Permit, provided that the proposed repairs are replacing a broken sewer line, pumping the septic tank or cleaning the effluent filter. Check with Lake County Environmental Health before undertaking any other work on a wastewater treatment system.

### Obtaining a Permit

To obtain an Installation Permit, the owner of record or their agent must complete the application form provided by Lake County Environmental Health. The applicant must complete the form to the best of their ability and have it signed and dated by either the owner of record or their authorized agent.

Each application must include:

1. Name, address, and phone number of the property owner.
2. Legal description of the property.
3. Installer's name, if known.
4. Lot layout consisting of:
    a. property lines
    b. existing and proposed structures, including basements
    c. floor plan for each level of the structure
    d. all existing or proposed wells and/or domestic water sources within 100 feet of the property lines
    e. all streams, lakes, springs, ponds, irrigation ditches, and other surface water sources within 100 feet of property lines
    f. driveways, parking areas
    g. utility lines
    h. any existing sewage disposal facilities
    i. a scale (for example: 1 inch=20 feet)
    j. direction of slope on the property
    k. a north directional arrow
    l. replacement area or plan for proposed wastewater treatment system

### Change of Use Permit

If a person is not making any physical changes to the wastewater treatment system but is changing the flow, a Change of Use Permit may apply. **No person may increase wastewater flow or strength beyond the design of a wastewater treatment system without a Change of**

**Use Permit from the Department.** Examples of uses requiring a Change of Use Permit include but are not limited to: addition of a bedroom(s) to a residence, alteration of a residential use - examples include: •daycare facility •office •vacation rental •bed and breakfast •home occupation, removal of a mobile home and replacement with another mobile home, except a unit within a mobile home court licensed by the Montana Food and Consumer Safety Section and replacement of a structure with a new structure.

A Change of Use Permit is also required for changing use of a commercial or industrial building. The Department will determine if the flow or strength of the wastewater requires additional capacity beyond the original system design.

**A Change of Use Permit cannot be issued for a wastewater treatment system that does not have a valid Use Permit issued by the Department.** Check with Lake County Environmental Health for an application and to determine if the system has a valid Use Permit. If the existing wastewater system is not adequate for the proposed use and the property owner elects to pursue the change, the owner will be required to apply for an Installation Permit and upgrade the system in accordance with the Installation Permit. The Change of Use Permit fee will be applied toward the Installation Permit fee.

## Fees

A permit fee must accompany the completed application when submitted to the Department for review. Checks are payable to the Lake County Environmental Health Department. Fees are as follows:

| | |
|---|---|
| Installation/Use Permit | $300.00 |
| Second or Subsequent Inspection | $100.00 |
| Change of Use Permit | $ 75.00 |
| Lot Evaluation | $200.00 |

If the applicant initiates a change in the wastewater treatment system design after it is approved by the Department, a second Installation/Use Permit fee must be submitted prior to the second review or alteration of the design.

## Montana Certificate of Subdivision Approval

The majority of septic system applications submitted to our office are on lots that have a Montana Certificate of Subdivision Approval, also called state septic approval. State septic approvals include a lot layout that shows the well location, well isolation zone, and drainfield location. When a sanitarian permits a system on a lot with a state septic approval, the drainfield and well **must be** located in the same location and orientation as shown on the approved lot layout.

If the lot owner wants to alter the drainfield or well location or orientation, they must submit additional information and pay additional fees to the Montana Department of Environmental Quality to re-write the state septic approval. If a wastewater treatment system is installed in conflict with the state septic approval, the system must be re-installed in the correct location. If a well is drilled in conflict with the state septic approval, the well must be re-drilled in the correct location. Otherwise, the owner may apply for a re-write of the State Septic Approval, and be granted approval if the change meets the state requirements.

Building locations are variable and determined by the property owner after considering the drainfield location, well location, and access roads.

Landowners, builders, installers, and well drillers are advised to contact our office for information on state septic approvals or how to change the approved lot layout if necessary.

## Setback Requirements

The components of any wastewater treatment system must be located so as to comply with the minimum separation requirements in accordance with A.R.M. 17.36.918 as shown in the following table:

| *Note: All measurements are in feet.* | Sealed components (1)<br>Other components (2) | Absorption Systems (3) |
|---|---|---|
| Public or Multiple-user Drinking Water Wells/Springs | 100 | 100 |
| Individual and Shared Drinking Water Supply | 50 | 100 |
| Other wells (4) | 50 | 100 |
| Suction lines | 50 | 100 |
| Cisterns | 25 | 50 |
| Roadcuts/Escarpments | 10 (5) | 25 |
| Slopes > 35% (5) | 10 (5) | 25 |
| Property boundaries (7) | 10 | 10 |
| Subsurface drains | 10 | 10 |
| Water mains (8) | 10 | 10 |
| Drainfields/Sand Mounds (3) | 10 | -- |
| Foundation Walls | 10 | 10 |
| Surface water, Springs | 50 | 100 |
| Floodplains | -- (1)<br>100 (2) | 100 |

(1) Sealed components include holding tanks, sealed pit privies, and the components addressed in Circular DEQ-4, Chapters 4 and 5. Holding tanks and sealed pit privies must be located at least ten (10) feet outside the floodplain or any openings must be at least two (2) feet above the floodplain elevation.

(2) Other components include the components addressed in Circular DEQ-4, Chapter 7.

(3) Absorption systems include the systems addressed in Circular DEQ-4, Chapter 6.

(4) Other wells include, but are not limited to, irrigation and stock watering, but do not include observation wells as addressed in Circular DEQ-4.

(5) Sewer lines and sewer mains may be located in roadways and on steep slopes if the lines and mains are safeguarded against damage.

(6) Down gradient of the sealed component, other component, or drainfield/sand mound.

(7) Easements may be used to satisfy the setback to property boundaries.

(8) Sewer mains that cross water mains must be laid with a minimum vertical separation distance of 18 inches between the mains.

## Soil Profile

The Project Sanitarian may require the digging of a test hole for a soil profile. The test hole will be used to determine one or more of the following:

- Soil type and its potential to treat and dispose of sewage effluent
- Depth to bedrock
- Depth to groundwater
- Verification of previously submitted data

The test hole must be 8-10 feet deep (unless bedrock or high groundwater is reached first) and the width of a backhoe bucket. The arrangements and cost of excavation is solely the responsibility of the applicant. **State minimum requirements dictate that a minimum of four feet of natural soil be present between the bottom of the drainfield trench and groundwater or bedrock.**

## Site Visit

Upon receiving the completed application(s) and appropriate fee(s), a Sanitarian from Lake County Environmental Health will visit the building site. The soil profile will be evaluated where required.

Based upon the visit, the Sanitarian will determine the type and size of the wastewater treatment system needed for that particular site. The applicant or their agent may arrange to accompany the Project Sanitarian on the site visit, if desired.

## Designing the System

As a courtesy to the residents of Lake County, a Sanitarian from the Lake County Environmental Health office will design most non-commercial systems in accordance with the Lake County Wastewater Treatment System Regulations and all other applicable regulations. Lake County Environmental Health designs will incorporate currently available technology while striving to preserve the water quality of both surface and ground waters. Wherever practical, pressure distribution will be incorporated into the design. Pressure distribution may be by pump or siphon depending upon site conditions.

**Please note that, because Lake County Environmental Health does not supervise system installation and does not have direct control over how the system is used and maintained, the department will not make any guarantee as to the life of an installed system or any of its components**.

If the applicant initiates a change in the design after approval or issuance by Lake County Environmental Health, the original installation permit is invalidated and a second installation/use permit fee must be submitted prior to the second review or alteration of the design.

An applicant for an Installation Permit may choose to have the system designed by a professional engineer or Montana Registered Sanitarian in private practice rather than the county department. The design must be approved and permitted by the Lake County Environmental Health Department. The cost of the private design is solely the responsibility of the applicant.

## Installers

All wastewater treatment systems installed and/or repaired in Lake County must have all work performed by or under the supervision of a wastewater treatment system contractor licensed to perform work in Lake County.

**A property owner of record may install their own wastewater treatment system at their primary residence, provided they successfully complete the Lake County Wastewater Treatment System Installer Exam.**

## Installing the System

The installer must construct the system as designed and/or approved by the Lake County Environmental Health Department and as directed in any related installation manual. Always refer to the manufacturer's instructions on installing specific components. Any deviation from the design in respect to type, components, specifications, size, configuration, orientation, etc. shall be approved by the Project Sanitarian.

**It is the responsibility of the installer to make sure all setback requirements are met**. In the event the installer discovers a situation that will prevent the system from being installed as designed, it is the responsibility of the installer to halt further construction and contact Lake County Environmental Health.

Additional installation requirements (unless otherwise stated within installation permit):

- Sewer line from house must fall at least ¼" per foot.
- If sewer line exceeds fifty feet, a cleanout must be installed for every fifty feet.
- Septic tank must be located 10 feet or more from foundation.

- Septic tank elevation and location may not be altered unless approved by Lake County Environmental Health.
- Septic tank cannot be set on fill material unless material is compacted in six-inch lifts to achieve a stable soil structure. Contact a licensed Professional Engineer for details.
- To facilitate maintenance of pumps, siphons, and filters, access ports must be extended to the finished ground surface, have lids of lightweight/durable construction, and have lids secured with hex screws, lag bolts, locks or other method to prevent child access.
- Drainfields must be located at least 10 feet from septic tank.
- Delivery line must be installed to drain back to tank or to drainfield to prevent freezing.
- Bottom of drainfield trenches must be level and on contour.
- Pressurized drainfield trenches must be less than 36" deep.
- Pressurized drainfield trenches utilizing infiltrators must be less than 24" deep.
- Ninety degree elbows in delivery lines are not recommended. Double forty-five degree elbows are preferred to reduce friction loss and increase pump efficiency.
- High water alarm and pump must be on separate circuits.
- Septic tanks must be accessible by septic tank pumper trucks.

## Final Inspection and Permit Issue

Upon completion of the system and prior to backfilling, the installer must contact Lake County Environmental Health for a final inspection. A minimum of forty-eight (48) hours notice is required. A representative of the Department will inspect the system for compliance with regulations.

Provided the system was installed as designed and is in compliance with regulations, a Use-Permit for the system will be issued. **It is strictly prohibited to use any new and/or repaired system that does not have a valid Use-Permit issued by Lake County Environmental Health.**

The installer should be prepared to disclose the source of all components used in the system. The following portions of the drainfield need to be exposed for final inspection, depending upon the system type:

A. Pressure-Dosed Conventional Trenches, Sandlined Trenches and EVTA (Evapotranspiration Absorption) Beds
   1. Septic tank lids and/or risers with access to the effluent filter and access to the pump or siphon and all applicable accessories
   2. Location of the alarm and control panels
   3. Completely exposed laterals and manifold
   4. The holes in the laterals must face upward until successful completion of the high head test; then the holes must be turned down and laterals glued in place
   5. Topsoil to be used to backfill EVTA systems
   6. As part of the final inspection, all pressure-dosed systems must have a high head test to determine squirt height and uniform distribution

B. All Infiltrator and Chamber Systems, including Pressure-Dosed Infiltrator Trenches, EVTA Beds, Sandfilters, Sand-lined Trenches and Elevated Sandmounds
   1. Septic tank lids and/or risers with access to the effluent filter and access to the pump or siphon and all applicable accessories
   2. Location of the alarm and control panels
   3. Each infiltrator trench must have at least one section of chamber off to expose a minimum of one upward orifice for squirt height inspection. The contractor **must** receive prior approval from the Lake County Environmental Health inspector before backfilling any other portion of the drainfield.

4. Two holes must face upward and every third hole must face downward and be shielded in systems with sand or soil directly under the laterals; the purpose of the down holes is to allow the laterals to drain once the pump or siphon has shut off.

## Other Permits: Zoning Conformance or Building Notification

In some cases, wastewater treatment system applicants must first obtain the appropriate Zoning Conformance or Building Notification Permit prior to building a structure. These permits are available at Lake County Planning, 406-883-7235, http://www.lakecounty-mt.org/planning. Applicants are encouraged to apply for all the necessary permits at the same time.

## System Maintenance

Property owners should have their septic tanks pumped every three to seven years, depending on use. The use of garbage disposal units will require the system to be pumped more frequently. Failure to have the septic tank pumped on a regular basis will decrease the life of the drainfield.

Note that systems with effluent filters prevent most solids from passing to the drainfield. Effluent filters should be inspected and cleaned at least **once a year**. When filters become clogged, effluent will no longer be able to flow to the drainfield and sewage may possibly back-up into the structure or may cause system failure. Should this occur, have the tank pumped if needed and/or the filter cleaned.

Leaking water fixtures will dramatically decrease the life of the drainfield. A toilet that appears to have only a minor leak will produce in excess of 100 gallons of water per day. The drainfield is not designed to accommodate the extra flow.

Lake County Environmental Health strongly discourages the use of septic tank additives. The use of these products can substantially decrease the life of the drainfield.

**It is strictly prohibited to alter, remove components, or to increase flows above the levels the septic system is designed to accommodate.** Lake County Environmental Health must approve all alterations to wastewater treatment systems prior to the change.

## Water Softeners

Backwash from water softeners, foundation drainage, and storm water runoff, may not be discharged into the wastewater treatment system. Contact the department for alternative disposal methods.

## Vehicular Traffic Restricted

No component of the wastewater system may be located under driveways, roads, parking areas, or locations subject to heavy loading and no vehicles may be driven over the system after installation unless those portions have been properly installed to accept traffic loads. **Non-compatible activity over the wastewater treatment system may void the Use Permit.**

## Vegetation In and Around the Drainfield

Vegetation is an important component in the treatment and disposal of sewage effluent. The uptake of effluent by plants is called transpiration. Evaporation-Transpiration-Absorption (ETA) systems are particularly dependent upon transpiration to treat and dispose of sewage effluent. However, certain types of plants with intrusive root systems can clog septic system components.

Research indicates Colorado Blue Spruce trees are an excellent choice to plant alongside drainfields or beds. Provided that tillage is done carefully and by hand, some gardens can also be planted over drainfields. H**owever, do not plant subterranean vegetables (those with edible parts below ground) intended for human consumption in or near a drainfield.** Trees and shrubs should be planted on the north and/or east side of a drainfield to allow the full effect of the sun's rays to maximize evaporation.